



Summary of Establishment Potential for *Ips typographus* in the Alaska USA:

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www.fs.fed.us/foresthealth/technology/invasives_ipsypographus_AK_riskmaps.shtml

The Establishment Potential Surface for *Ips typographus* was produced for the State of Alaska in 1 square kilometer (km²) units by the U.S. Forest Service, Forest Health Technology Enterprise Team's (FHTET) Invasive Species Steering Committee (Table 1). The product's intended use in conjunction with the Introduction Potential Surface is to develop a Susceptibility Potential Surface for *Ips typographus*. Supporting information was taken from the Exotic Forest Pest (ExFor) website (<http://spfnic.fs.fed.us/exfor/>). Four primary datasets with standardized values from 0 to 10 were used in the analysis. The output values also range from 0 to 10 with 10 having the highest establishment potential. The Establishment potential surface is composed of two primary data themes: 1) Host, and 2) Disturbance. Host data consists of: Forest cover types that contain one or more of the following tree species: spruce, larch, and fir. The Disturbance data consists of: Forest Damage factors from 1989 - 2005, fires from 1950 - 2005, and Flooding. Disturbance and Host data were combined into a weighted overlay illustrated in Table 3 to produce the final Establishment surface.

Disturbance

Disturbance is the result of an equal weighted overlay of Historic Disturbance and Recent Disturbance.

Historic Disturbance

Using a maximum overlay process we combined Fires (1950 - 1999), Forest Damage (1989 - 1995) and Flooding into a single Historic Disturbance Data Set. That is, any GRID cell where a fire, forest damage or flooding event occurred that particular GRID cell coincident with that event would have a GRID value of 10.

Forest Damage

Source: Alaska Department of Natural Resources, USDA Forest Service Forest Health Protection, State and Private Forest (<http://agdc.usgs.gov/data/projects/fhm/#K>). Two Forest damage data sets were used: 1) Forest Damage from 1989 - 2002, and 2) Forest Damage from 1996 - 2005. These data were combined into a single forest damage data set then partitioned. Furthermore, the Forest damage data were combined as follows: Forest Damage 1989 - 1995 (From the original 1989 - 2002) and Forest Damage 1996 - 2005. These data were converted to 1000 X 1000 meter GRID cells and combined using a maximum overlay process. This created the Forest Damage surface from 1989 - 2005. Finally, the data were partitioned into two forest damage data set based on temporal 1989 - 1995 and 1996 - 2005. Therefore, where forest damage occurred a GRID value of 10 was assigned to that cell.

Fires

Source: Alaska Fire Service in Ft. Wainwright, Alaska. Two Fire data sets were used: 1) Fires from 1950 - 1999, and 2) Fires from 2000 - 2005. Both fire data sets were converted into 1000 X 1000 meter GRID cells with a constant value of 10 for all areas where fires occurred.

Flooding

Flooding data was acquired from FHTET in Fort Collins, Colorado in the Risk Mapping Program.

Recent Disturbance

Recent Disturbance uses Fires from 2000 - 2005 and Forest Damage from 1996 - 2005.

Host

Forest Cover

Source: Vegetation Map of Alaska by Michael Fleming <http://agdc.usgs.gov/data/projects/fhm/#G>. Forest Cover Types used are contained in Table 2. The weight column (Table 2) is the weighted values used in the overlay process (Table 3).

Table 1

Steering Committee

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Table 2 Forest Cover Types

Values	Vegetation Cover Class Names:	Weight
10	Tall Shrub	5
11	Closed Broadleaf & Closed Mixed Forest	5
12	Closed Mixed Forest	5
13	Closed Spruce Forest	10
14	Spruce Woodland/Shrub	5
15	Open Spruce Forest/Shrub/Bog Mosaic	5
16	Spruce & Broadleaf Forest	5
17	Open & Closed Spruce Forest	10
18	Open Spruce & Closed Mixed Forest Mosaic	5
19	Closed Spruce & Hemlock Forest	5

Table 3

Establishment Variables and Arithmetic Weights.

Variable	Weight
Disturbance	40%
Host	60%

Point of Contact

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